

# **ENVIRONMENTAL ASSESSMENT**

## **ON**

### **TAMIAMI TRAIL CULVERTS PROJECT**

#### **COLLIER COUNTY, FLORIDA**

#### **MONROE COUNTY, FLORIDA**

### **1. PROJECT PURPOSE AND NEED**

#### **1.1. PROJECT AUTHORITY**

This project is authorized by Section 528 of the Water Resources Development Act of 1996 (WRDA 96), which authorizes the Secretary of the Army to "develop specific water quality related project features, which are essential to Everglades Restoration". This project was ranked the second highest in priority by the Government Commission responsible for reviewing Critical Projects for south Florida.

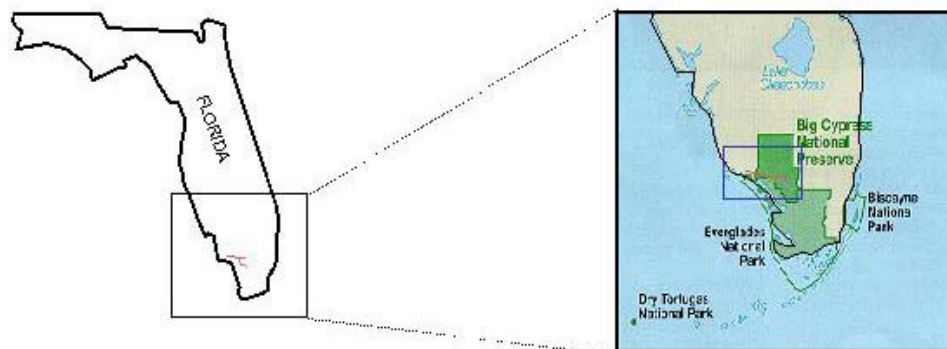
#### **1.2 PROJECT LOCATION.**

The project begins south and east of Naples, Florida at the intersection of Tamiami Trail (US 41) and SR 92 (San Marco Road). From this intersection at the Collier Seminole State Park, the project extends eastward along the Tamiami Trail corridor to Fifty Mile Bend, a distance of approximately 43 miles. The project reach also includes a portion of Loop Road, which is south of Tamiami Trail beginning at Monroe Station. (see vicinity map, page 2).

#### **1.3 PROJECT NEED AND OPPORTUNITY**

The construction of Highway 41 (Tamiami Trail) and the excavation of the adjacent borrow canal caused historic water flows to be intercepted and diverted, thus disrupting the continuity of natural water basins. The current channelized flowways have disrupted the timing, quantity, and distribution of surface water flows, allowing too much fresh water into some wetland habitats, while others are subject to more drying conditions. Because of a limited number of bridges and culverts beneath the highway, the resulting channelization and ponding have led to changes in plant communities and hazardous attractions to wildlife. The alteration of hydroperiods has allowed the invasion of nuisance and exotic vegetation, and led to changes in foraging and nesting opportunities for wildlife. This project will help to restore more natural hydrological conditions to the major drainage basins, and coastal areas to the south. The increased number of flowways provided by the project will improve the flow of surface water within the watersheds of Ten Thousand Islands National Wildlife Refuge & Aquatic Preserve, Picayune State Strand Forest, Fakahatchee Strand State Preserve, Big Cypress

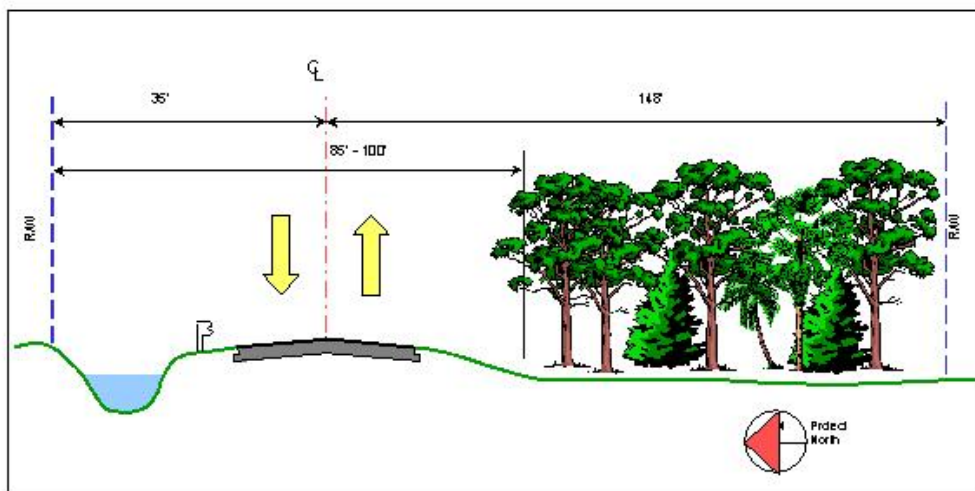
National Preserve, and Everglades National Park. Habitat value for native plant and animal communities will also be improved by the more evenly distributed conveyance of water.



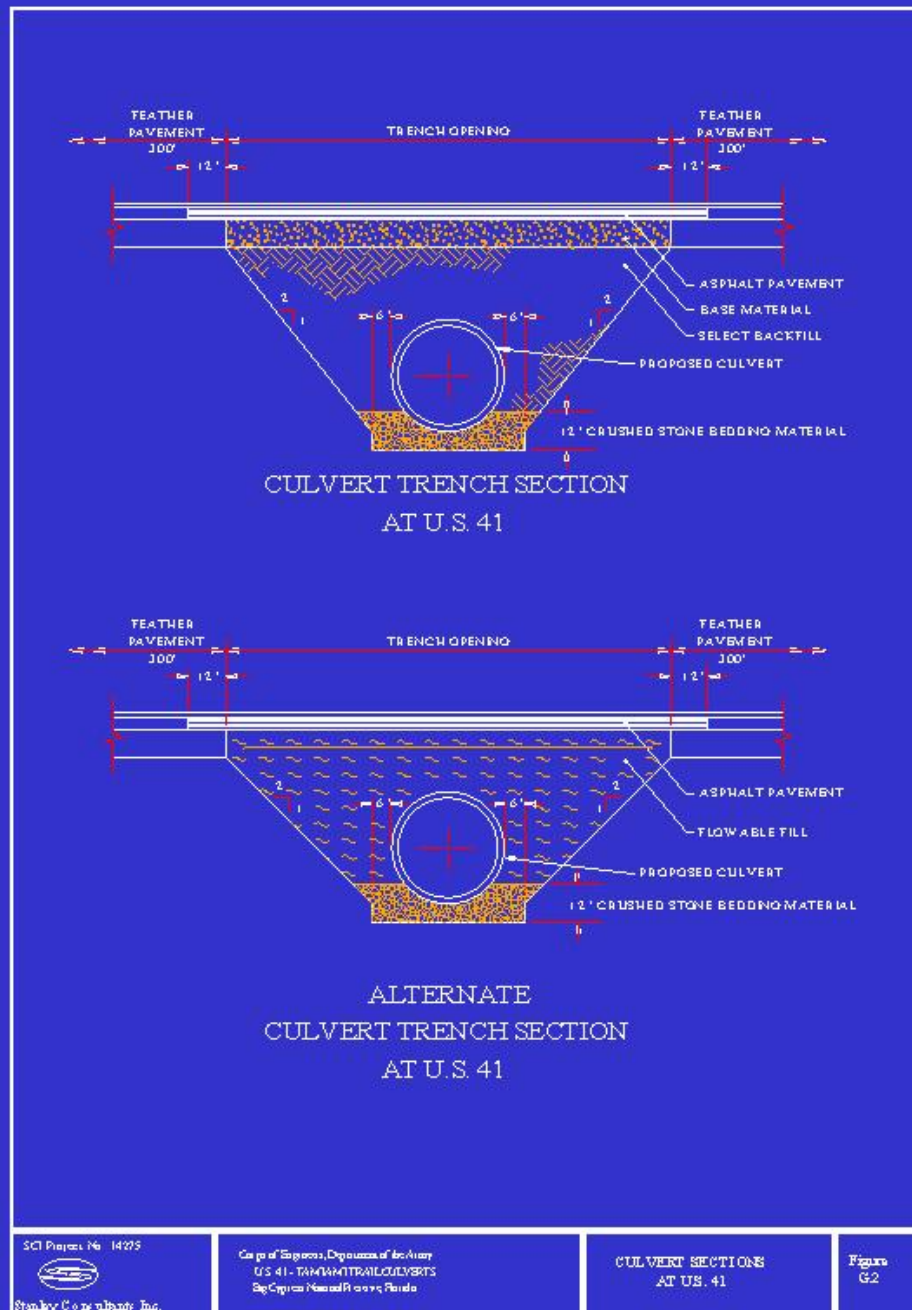
## LOCATION TAMiami TRAIL CULVERTS CRITICAL PROJECT



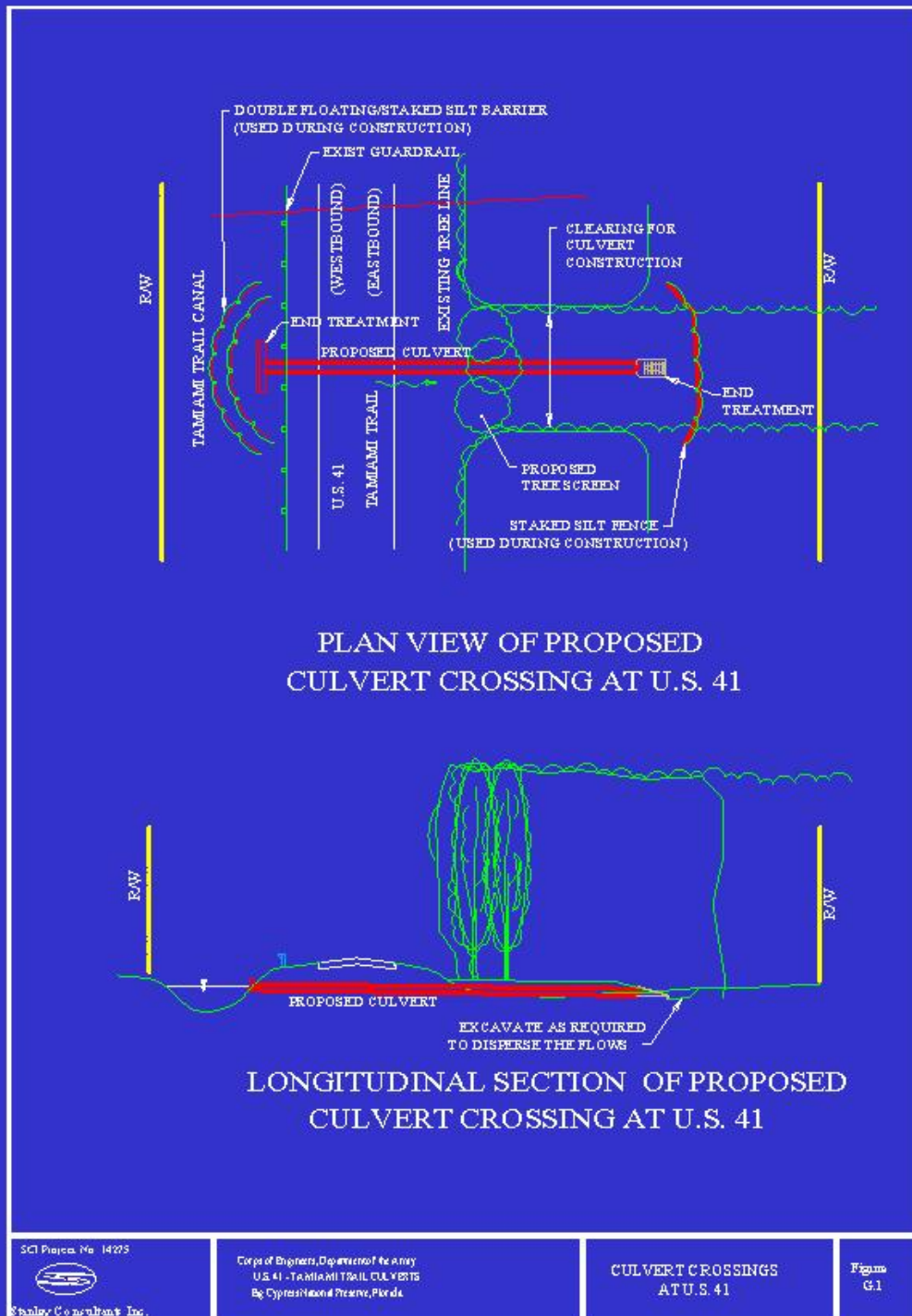
**GENERAL FLOW PATTERNS**  
(from Big Cypress National Preserve  
National Audubon Society)

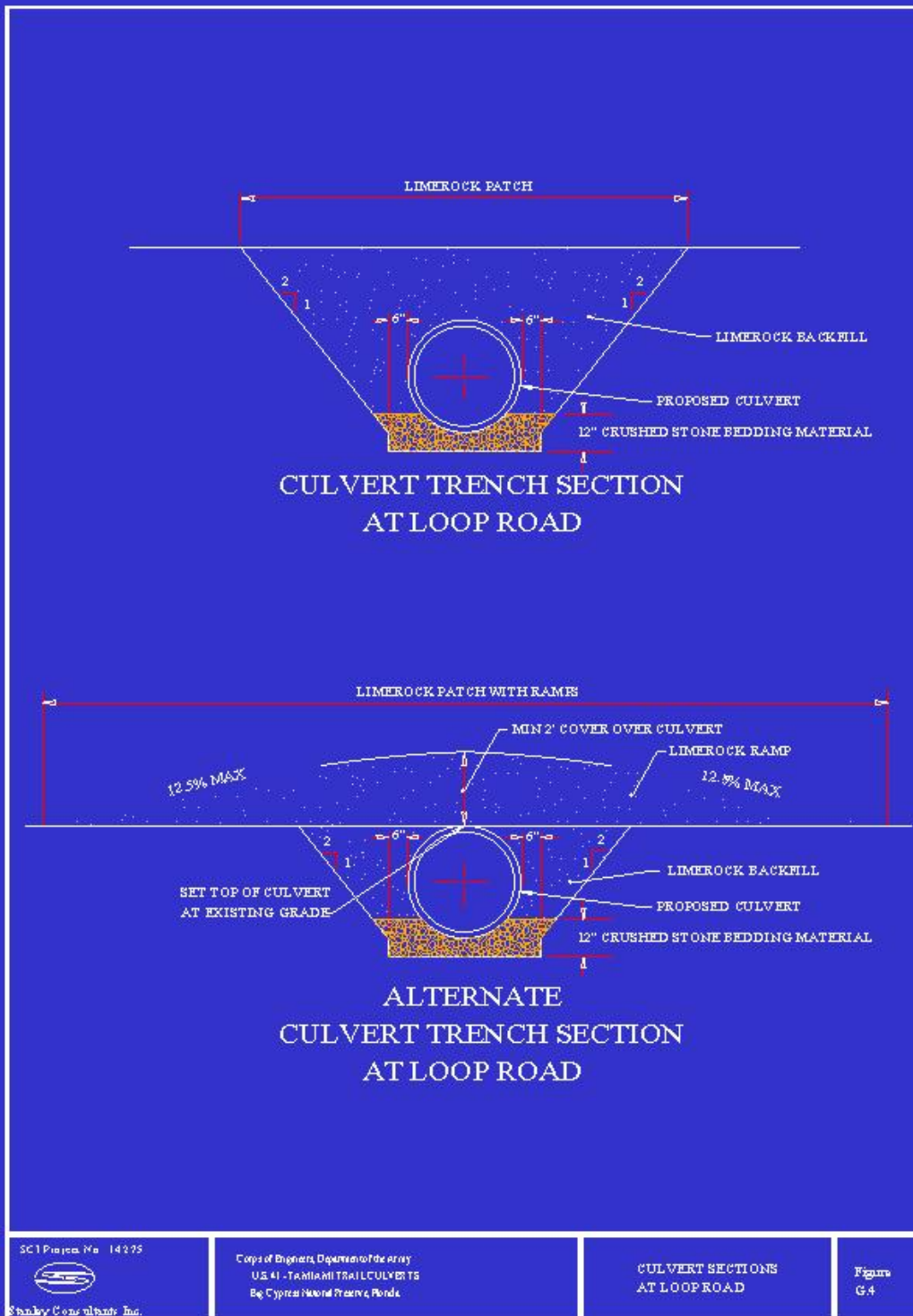


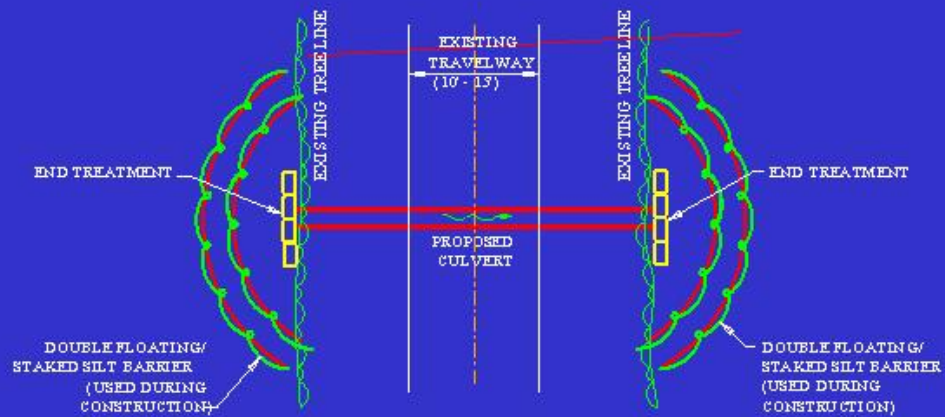
**TYPICAL CROSS SECTION AT ROAD**



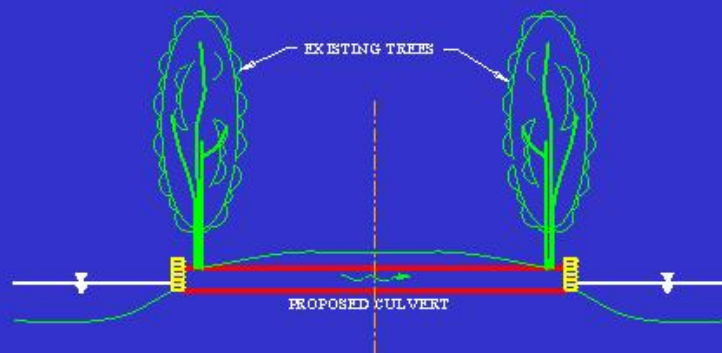








PLAN VIEW OF PROPOSED  
CULVERT CROSSING AT LOOP ROAD



LONGITUDINAL SECTION OF PROPOSED  
CULVERT CROSSING AT LOOP ROAD

SC1Pavcon No. 14275



Stanley Consultant Inc.

Corps of Engineers, Department of the Army  
U.S. 41 - TAMPA MI TRAIL CULVERTS  
Big Cypress National Preserve, Florida

CULVERT CROSSINGS  
AT LOOP ROAD

Figure  
G.3

**1.4 AGENCY GOAL OR OBJECTIVE.** The environmental benefits that are the goals of this project depend on changing the flow regime through Tamiami Trail for normal, low flow conditions. Therefore, re-establishing sheet flow south of Tamiami

Trail is the prime design consideration. This project calls for 62 culverts to be installed at 54 different sites along Tamiami Trail, and 15 culverts at 8 sites along

Loop Road. In addition, a total of up to 21 blocking plugs are to be constructed in the borrow canal to direct water flow into the culverts for full design performance. Culverts will be placed in areas to promote the restoration of natural flow patterns south of Tamiami Trail, and shall be designed to discourage ponding on either side close to the roadway. The new culverts are to be constructed within the right of way, which is 35 feet from the centerline of the road to the north, and 148 feet from the centerline to the south. Plugs will be designed to overflow at high discharges so that the roadway is not overtopped. Any changes to the drainage system should not impede hydraulic performance under severe flood conditions. The presence of mature trees, the presence or absence of nuisance vegetation, and the known presence of protected flora and fauna will be carefully considered during culvert design and placement. (see figures 1 through 4, plan views and typical cross sections).

#### **1.5. RELATED ENVIRONMENTAL DOCUMENTS.**

The Draft Fish and Wildlife Coordination Act Report was completed in May 1999, and is attached as Appendix C.

#### **1.6. PERMITS, LICENSES, AND ENTITLEMENTS.**

Water quality certification will be applied for as required by Section 404 (b)(1) of the Clean Water Act. Road resurfacing other than that attendant to culvert installation is not part of the Federal Project, and will require a Department of the Army permit (i.e., discharge of dredged or fill material into wetlands or other waters of the United States). This also applies to site preparation at various locations along Tamiami Trail for turn-outs planned for future construction by the BCNP.

### **2.0. ALTERNATIVES**

The alternatives section is the heart of this EA. This section describes in detail the no-action alternative, the proposed action, and other reasonable alternatives that were studied in detail. Then based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decisionmaker and the public.

#### **2.1.1. ALTERNATIVE A: INSTALL 87 CULVERTS AT 30 LOCATIONS UNDER TAMIAMI TRAIL, AND INSTALL 29 PLUGS IN BORROW CANAL.**



This alternative was the initial proposal submitted in the Letter Report, and calls for the construction of 87 additional culverts under Tamiami Trail located at 30 different sites; per site culvert counts range from 1 to 7. In conjunction with the added culverts, a total of 29 blocking plugs would be constructed in the existing borrow canal. The plugs would extend from the top of road to the existing natural grade on the opposite (northern) side of the canal. Blocking the east-west flow of the canal would achieve a balance of runoff conveyed by the proposed culverts. Exact locations for plugs would be set after field inspection to determine the best location in the natural drainage swales. Culverts will be placed to provide maximum benefits for hydrology as well as habitats improvement.

#### 2.1.2. ALTERNATIVE B: INSTALL MULTIPLE CULVERTS AT SEVEN LOCATIONS.

Field inspection to identify exact culvert locations had not yet been done at the time of the initial proposal, and the locations of existing water conveyance structures (bridges/piers) were not known. Hydraulic analysis was conducted of the Tamiami Trail corridor from SR 92 to Fifty-Mile Bend, using flow data, topographic and natural flow-way mapping, and mechanical modeling. This analysis identified major drainage basins in the area, and resulted in a recommendation for a fewer number culverts to be placed at strategic locations within these basins. During a site visit to the study area, it was discovered that existing water conveyance structures were already in place at these locations, installed during construction of the road. Physical inspection of the roadway and adjacent vegetated areas highlighted the fact that water was ponding on the north side, leaving the south side with too little water. A study was initiated which further indicated the need for increased water conveyance throughout the area to re-establish natural hydropatterns for the continued health of wetlands and wildlife dependent on a more even flow of water.

#### 2.1.3. ALTERNATIVE C: INSTALL 62 CULVERTS AT 54 LOCATIONS UNDER TAMIAMI TRAIL; INSTALL 15 CULVERTS AT 8 SITES UNDER LOOP ROAD, AND CONSTRUCT 21 PLUGS IN BORROW CANAL (Preferred Plan).

This alternative, the preferred plan, calls for 62 culverts to be installed at 54 different sites along Tamiami Trail, and 15 culverts at 8 sites along Loop Road. In addition, a total of up to 21 blocking plugs are to be constructed in the borrow canal to direct water flow into the culverts for full design performance. Culverts will be placed in areas to promote the restoration of natural flow patterns south of Tamiami Trail, and shall be designed to discourage ponding on either side close to the roadway. The new culverts are to be constructed within the right of way, which is 35 feet from the centerline of the road to the north, and 148 feet from the centerline to the south. Plugs will be designed to overflow at high discharges so that the roadway is not overtopped, and will be located adjacent to original drainage basins. Any changes to the drainage system should not impede hydraulic performance under severe flood conditions.

#### 2.1.4. THE NO-ACTION ALTERNATIVE.

Under this alternative, the present conditions would remain unchanged. The Tamiami Trail would continue to severely impede the north-south flow of surface water in Ten Thousand Islands, Southern Golden Gate Estates, Fakahatchee Strand, Big Cypress National Preserve, Water Conservation Area 3A, and Everglades National Park. The borrow canal, with its east-west flow, would continue to intercept waters which would have flowed southward under natural conditions. The area would continue to experience channelization of flowways, ponding, changes in wetland communities, and the associated detrimental effects of altered hydroperiods on native plant and animal species.

### **3. AFFECTED ENVIRONMENT**

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative forms the base line conditions for determining the environmental impacts of the proposed action.

#### **3.1. GENERAL ENVIRONMENTAL SETTING**

The project limits intersect or bound natural ecosystems within portions of Collier Seminole State Park, Picayune Strand State Forest, Ten Thousand Islands National Wildlife Refuge, Fakahatchee Strand State Preserve, and Big Cypress National Preserve. Typical plant communities intersected by the Tamiami Trail consist of coastal freshwater marsh, cypress forest, herbaceous marsh and prairie. Other natural habitats adjacent to the Tamiami Trail corridor, extending from Royal Palm Hammock to Fifty-Mile Bend, include coastal forest, mixed swamp forest, and pine forest ecosystems. According to the BCNP GIS maps (1998), the vegetative associations intersected by Tamiami Trail and Loop Road include graminoid marsh, hardwood scrub, scattered pine and cypress in herbaceous prairie, cypress strand with scattered pine, herbaceous prairie, and cypress strand. The disruption of the natural water flow by the roadway and canal has altered the hydrology of this area, creating unnatural hydroperiods and shifts in plant species composition. Such physical disturbances have led to the invasion of opportunistic exotic and nuisance species such as Australian pine (*Casurina spp.*), Brazilian pepper (*Schinus terebinthifolius*), cattail (*Typha spp.*), and melaleuca (*Melaleuca quinquenervia*).

#### **3.2. THREATENED AND ENDANGERED SPECIES**

##### **3.2.1. AMERICAN CROCODILE**

The American crocodile (*Crocodylus acutus*) is listed as endangered by the U.S. Fish and Wildlife Service (USFWS) and the Florida Game and Freshwater Fish Commission

(FGFWFC). This species occurs primarily in Florida Bay within Everglades National Park, and is not known to inhabit areas immediately adjacent to Tamiami Trail, although one sighting in the canal near SR 29 has been reported.

### 3.2.2. BALD EAGLE

The bald eagle (*Haliaeetus leucocephalus*) is listed as threatened by the USFWS. This species occurs in a variety of habitats, but generally nests in older, taller trees and feeds in areas in close proximity to water. Three bald eagle nests have been documented within the Big Cypress National Preserve (BNCP).

### 3.2.3. BIG CYPRESS FOX SQUIRREL

The Big Cypress fox squirrel (*Sciurus niger avicennia*) is listed as threatened by the FGFWFC. Known habitats for this species include cypress swamps, pine flatwoods, and tropical hardwood forests. Sixteen sightings and three roadkills have been documented in the BCNP (Jansen and Dusek, 1998).

### 3.2.4. CAPE SABLE SEASIDE SPARROW

The project area lies outside the designated critical habitat of the endangered Cape Sable seaside sparrow (*Ammodramus maritima mirabilis*), however, birds may recolonize marl prairie communities that are characterized by the shorter hydroperiods favorable to breeding. A 1998 survey identified sparrows in the area south of Loop Road between Forty Mile Bend and Trail City. This species is listed as endangered by both the USFWS and the FGFWFC.

### 3.2.5. EVERGLADES MINK

The Everglades mink (*Mustela vison evergladensis*) is listed as threatened by the FGFWFC. This species is known to utilize all types of shallow wetland habitats, and is vulnerable to dewatering of these habitats. Roadkills may be a significant source of mortality where roads cross wetlands (Humphrey, 1992). Although actual sightings of the Everglades mink within the BCNP have not been documented, four roadkills have been collected from the Tamiami Trail and Loop Road (Jansen and Dusek, 1998).

### 3.2.6. FLORIDA BLACK BEAR

The Florida black bear is listed as threatened by the FGFWFC in all of Florida except Baker and Columbia Counties, and the Apalachicola National Forest. In Collier County, this species is known to inhabit pine flatwoods, mixed and cypress swamps, hardwood hammock, cabbage palm forest, mangrove thicket, herbaceous marsh, and disturbed areas. Documented activity along Tamiami Trail has occurred primarily between Seagrape Drive and Turner River Road (Land, 1994).

### 3.2.7. FLORIDA PANTHER

The Florida panther is listed and endangered by both the USFWS and the FGFWFC. Panthers are known to utilize many types of habitat, including pine flatwoods, mixed and cypress swamps, live oak hammock, cabbage palm forest, Brazilian pepper thicket, and sawgrass marsh. Telemetry monitoring of panther activity, initiated in 1989, has resulted in the documentation of numerous crossings and activity along Tamiami Trail and Loop Road. Approximately 50% of the documented activity within one-half mile of Tamiami Trail occurred near the junction of Turner River Road. Three panther mortalities have been documented within the BCNP since 1981.

#### 3.2.8. RED-COCKADED WOODPECKER

The red-cockaded woodpecker is listed as endangered by the USFWS and Threatened by the FGFWFC. There have been thirty-four documented clusters of woodpeckers within the BCNP. The nearest cluster to the Tamiami Trail is approximately 3.1 miles north of the highway.

#### 3.2.9. SNAIL KITE

The snail kite (*Rostrhamus sociabilis*) feeds exclusively on mollusks called apple snails (*Pomacea paludosa*), which are available to the birds only in marshes that retain water throughout the year. Because of this specialized feeding behavior, snail kite populations are especially vulnerable to loss of suitable habitat due to unnatural alteration of water levels. When water levels are high, snail kites are known to concentrate and breed at the southern edge of Water Conservation Area 3A, which is adjacent to the eastern limit of the project. This species is listed as endangered by both the USFWS and the FGFWFC.

#### 3.2.10. WEST INDIAN MANATEE

Manatees utilize coastal, estuarine, and some riverine habitats which allow access to aquatic plants, sources of freshwater, and deeper (1-2 m) channels (Humphrey, 1992). Manatees occur in the Faka Union Canal and in the vicinity of Port of the Islands. Manatee activity has also been documented in Half-Way Creek, Turner River, Tamiami Canal, and some small freshwater canals in the Ochopee area. The West Indian manatee (*Trichechus manatus*) is listed as endangered by both the USFWS and the FGFWFC.

#### 3.2.11. WOOD STORK

The wood stork (*Mycteria americana*) is listed as endangered by the USFWS and the FGFWFC. Wood storks nest in woody vegetation located over or surrounded by water. Forty-five wood stork nesting sites have been documented in the BCNP since 1996 (Jansen and Dusek, 1998.) The preferred foraging habitat of the wood stork is relatively calm water, 1-15 inches deep, where fish are concentrated (Rodgers, et al., 1996). Many of these foraging habitats are found within and near the project area. Excessive ponding at many of the existing bridge locations provides an attraction to wading birds,



and wood stork mortalities have been documented along the Tamiami Trail due to the close proximity of these ponds to the roadway. Birds feeding in the ponds become startled by oncoming traffic, and often cannot reach sufficient height to clear the vehicles.

### 3.3. FISH AND WILDLIFE RESOURCES

Common forage fishes of Everglades marsh habitats provide food for reptiles, amphibians, mammals and wading birds. These fishes can be found in the canals, ponded areas adjacent to culverts, and gator holes. The majority are represented by four families: *Cyprinidae* -carps and minnows, *Cyprinodontidae* - killifishes, *Poeciliidae* - livebearers, and *Centrarchidae* - sunfishes. Stabilized water levels allow the survival of larger fish such as Florida gar (*Lepisosteus platyrhincus*) and bullhead catfish (*Ictalurus spp.*), which can be found in deep marshes and ponds. Invertebrates including the apple snail, seminole rams-horn, crayfish, and riverine grass shrimp are also important forage organisms. The most visible reptile of the area is the American alligator (*Alligator mississippiensis*), which can be observed in the canals and sunning along the banks. Snakes, including the green water snake (*Nerodia cyclopion*), eastern ribbon snake (*Thamnophis sauritus*) and striped crayfish snake (*Regina alleni*) also inhabit the area, along with various species of turtles and amphibians. Birds are easily observable from the roadway, and are an attraction to many motorists. Wading birds including the American bittern (*Botaurus lentiginosus*), green-backed heron (*Butorides straitus*), great blue heron (*Ardea herodias*), white ibis (*Eudocimus albus*), tricolored heron, little blue heron and great egret (*Egretta tricolor*, *E. caerulea*, *E. thula*), are often seen foraging in wet areas. Anhingas and double crested cormorants can be observed in the trees drying their feathers after a dive. Mammals of the Everglades include terrestrial and aquatic species such as bobcat (*Felis rufus*), white-tailed deer (*Odocoileus virginianus*), marsh rabbit (*Sylvilagus palustris*), raccoon (*Procyon lotor*), marsh rice rat (*Oryzomys palustris*), cotton mouse (*Peromyscus gossypinus*), and round-tailed muskrat (*Neofiber alleni*),. River otters (*Lutra canadensis*) have been observed traveling down Loop Road and ducking into the canal.

### 3.4. VEGETATION

West of SR 29 the typical vegetative communities of the Tamiami Trail corridor are coastal freshwater marshes. This area of the project reach is approximately five and one half miles from the Gulf of Mexico, and therefore is influenced by tidal action and higher salinity. These marshes are characterized by plant species such as saltgrass (*Distichlis spicata*), cordgrass (*Spartina bakeri*), black rush (*Juncus roemerianus*), sea purslane (*Sesuvium spp.*), cabbage palm, and scattered mangroves. Mangrove trees are well adapted to salt water and can withstand the influence of tides. As the project moves eastward, plants indicative of wet prairie communities become more dominant. These include sawgrass (*Cladium jamaicense*), muhly grass (*Muhlenbergia capillaris*), maidencane (*Panicum hemitomon*), and various species of sedges and rushes. The forest canopy is predominately comprised of cypress trees (*Taxodium distichum*, *T. ascendens*), which form large strands throughout the area. The understory contains

shrub and herbaceous species such as wax myrtle (*Myrica cerifera*), red maple (*Acer rubrum*), cocoplum (*Chrysobalanus icaco*), beakrush and swamp fern (*Blechnum serrulatum*).

### **3.5. HISTORIC PROPERTIES**

No historic properties are recorded in the Florida Master Site File within the Tamiami Trail right of way in the project area. Culverts will be placed in natural drainage basins and will not intrude on existing tree islands. The Corps has determined that no properties listed or eligible for listing on the National Register of Historic Places will be affected by the project.

### **3.6. AESTHETIC RESOURCES**

The Tamiami Trail is a relatively undeveloped 2-lane roadway traversing an otherwise natural setting. (See Section 3.1, General Environmental Setting).

### **3.7. RECREATION**

Although the Tamiami Trail runs through National and State Park lands, there are limited recreational opportunities in the actual footprint of the project (road and right-of-ways). The Tamiami borrow canal, Loop Road Canal, and roadside ponds are inhabited by fish and other aquatic animals, and people do sometimes fish in these areas. Pulling off the road onto the narrow shoulders for other than emergency purposes is discouraged in the interest of public safety.

### **3.8. WATER QUALITY**

Water quality in the area has been influenced by drainage and development. Natural drainage patterns have been disrupted by features such as canals, levees, and roadways. This allows increased stormwater run-off and wastewater discharges to enter the system with their associated contaminants. Of particular concern are high nutrient levels, which provide favorable conditions for the displacement of sawgrass marsh by cattail. Also, the interception of surface water flow by the roadway and canal has reduced the amount of fresh water flowing into the estuarine ecosystems of the Ten Thousand Islands National Wildlife Refuge and Everglades National Park.

### **3.9. AIR QUALITY**

The project area is in compliance with ambient air standards.

### **3.10. NOISE**

There is no significant source of noise in the area other than the normal noises associated with highway traffic.

### 3.11. HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

The Hazardous, Toxic or Radioactive Waste (HTRW) preliminary assessment indicated, that in general, no evidence of HTRW exists. During project construction further HTRW awareness should be practiced. The HTRW database review indicated that no contamination exists along the Tamiami Trail except that, a leaking underground storage tank (UST) about a mile from the western boundary of the project, was revealed. However, all UST's are to be upgraded by 1999 and associated contaminated soils remediated. The leaking UST, although located on Tamiami Trail, was not impacting the proposed project area.

## 4. ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects. (Also, see Table 1, Summary of Direct and Indirect Effects).

ALTERNATIVE ENVIRONMENTAL FACTOR	A: INSTALL 87 CULVERTS AT 30 SITES AND 29 PLUGS	B: INSTALL MULTIPLE CULVERTS AT 7 SITES	C: INSTALL 62 CULVERTS AT 54 SITES AND 21 PLUGS	NO ACTION
PROTECTED SPECIES	Fewer sites would deny additional water and habitat improvements to many areas.	Equalized water conveyance would not be achieved. Roadside ponding would continue.	Improved habitat value due to more even water conveyance throughout the project area.	No habitat improvement.  Roadside ponding would continue to be attractive nuisance for wildlife.
VEGETATION	Fewer sites would fail to deliver adequate water necessary to sustain wetland plant communities.	Too much water at too few sites would allow continued channelization and wetland degradation.	Favorable conditions for wetland communities would be restored on both sides of roadway.	Water would continue to back up on north side of road while south side would remain too dry.
FISH AND WILDLIFE RESOURCES	Roadside ponds would no longer be available to fish, but overall habitat would improve in some areas.	Some roadside ponds would be available to fish, but overall habitat would not greatly improve.	Roadside ponds would no longer be available to fish, but overall habitat value would increase throughout.	Marginal habitat would be available to fish in ponds, but overall habitat would  continue to degrade.
HISTORIC PROPERTIES	No impact expected at this time.	No impact expected at this time.	No impact expected at this time.	No impact expected at this time.
AESTHETICS	Slight impacts	Slight impacts	Slight impacts	No impacts or

ALTERNATIVE ENVIRONMENTAL FACTOR	A: INSTALL 87 CULVERTS AT 30 SITES AND 29 PLUGS	B: INSTALL MULTIPLE CULVERTS AT 7 SITES	C: INSTALL 62 CULVERTS AT 54 SITES AND 21 PLUGS	NO ACTION
	during construction.	during construction. Overall long-term scenic quality should improve.	during construction. Overall long-term scenic quality should improve.	benefits
RECREATION	No changes expected	May improve wildlife observation opportunity.	May improve wildlife observation opportunity.	No change
WATER QUALITY	Some turbidity during construction. Improved mixing. No long-term adverse effects.	Some turbidity during construction phase. Channelization and erosion would decrease.	Some turbidity during construction phase. Channelization and erosion would decrease.	No impacts or benefits
AIR QUALITY	Slight impact caused by operation of construction equipment. No long-term adverse effects.	Slight impact caused by operation of construction equipment. No long-term adverse effects.	Slight impact caused by operation of construction equipment. No long-term adverse effects.	No change
SOLID WASTE	Concrete or paving materials will be disposed of in accordance with laws and regulations.	Concrete or paving materials will be disposed of in accordance with laws and regulations.	Concrete or paving materials will be disposed of in accordance with laws and regulations.	None generated
HAZARDOUS AND TOXIC WASTES	Not known to be present	Not known to be present	Not known to be present	Not known to be present
PUBLIC SAFETY	Traffic will be detoured around construction. Uneven pavement will be avoided post construction.	Traffic will be detoured around construction. Uneven pavement will be avoided post construction	Traffic will be detoured around construction. Uneven pavement will be avoided post construction.	No change in roadway conditions.

#### 4.1. GENERAL ENVIRONMENTAL EFFECTS

The primary purpose of this project is to restore more natural hydrological conditions in areas where historic surface water flow has been restricted by the roadway and intercepted by the borrow canal. The current limited number of bridges/piers have altered the hydropattern from sheet flow to a more channelized flow, keeping some areas too dry, while other areas receive too much water. These conditions have led to changes in vegetative communities that provide habitat for fish and wildlife. Installation of additional culverts is expected to equalize the conveyance per square mile of drainage area by providing additional conveyance to sub-basins, which are currently



below average capacity. Improvements in the continuity of flow will lead to more natural hydropatterns, and restoration of habitat value, both north and south of the road.

## **4.2. THREATENED AND ENDANGERED SPECIES**

### **4.2.1. AMERICAN CROCODILE**

The construction of additional culverts and subsequent changes in hydrology are not expected to adversely impact this species.

### **4.2.2. BALD EAGLE**

It is not anticipated that culvert installation will adversely affect this species, however precautions will be taken to avoid or minimize any construction related disturbances, especially during the breeding season.

### **4.2.3. BIG CYPRESS FOX SQUIRREL**

No adverse impacts to this species are anticipated to occur in conjunction with the proposed culvert installation.

### **4.2.4. CAPE SABLE SEASIDE SPARROW**

The proposed new culvert locations along Loop Road are well away from any existing sparrow nesting sites. Habitat in this area is characterized as wet prairie interspersed with cypress strands and mixed hardwood-cypress strands. It is expected that the additional flows and increased hydroperiods will discourage further establishment of woody vegetation to the advantage of herbaceous species such as muhly grass, sawgrass, and maidencane. These conditions are favorable to potential recolonization by the sparrow. It has been determined, from the position of the culverts, direction of flow, and capacity, that existing sparrow populations, and possible future populations, will not be adversely affected.

### **4.2.5. EVERGLADES MINK**

Specific culvert shapes, sizes, and elevations that would serve as wildlife crossings for smaller animals may potentially decrease mortality of this species. These options will be evaluated during the final design phase of the project.

### **4.2.6. FLORIDA BLACK BEAR**

It is not anticipated that any vegetation or habitat changes subsequent to the placement of additional culverts will adversely affect black bear populations.

### **4.2.7. FLORIDA PANTHER**

Changes in vegetation and habitat associated with increased water conveyance are not expected to adversely affect this species.

#### 4.2.8. RED-COCKADED WOODPECKER

Due to the red-cockaded woodpeckers' habitat preference for old growth pinelands, and the current distribution of populations of this species, installation of additional culverts and subsequent changes in hydrology and vegetation are not expected to adversely affect this species.

#### 4.2.9. SNAIL KITE

The proposed project and subsequent changes in hydrology and vegetation are not anticipated to adversely affect this species because of the lack of suitable snail kite nesting habitat within the project area.

#### 4.2.10. WEST INDIAN MANATEE

It is not anticipated that the hydrological changes associated with the additional culverts will adversely affect the manatee or the estuarine and riverine habitats utilized by the manatee. Protection measures such as culvert sizing and the use of grates will be addressed in the final design phase of the project. During construction, the Standard Manatee Construction Conditions will be implemented.

#### 4.2.11. WOOD STORK

Mortalities of the endangered wood stork have been documented along the Tamiami Trail due to the formation of ponds in close proximity to the roadway. Birds feeding in the ponds become startled by oncoming traffic, and often cannot reach sufficient height to clear the vehicles. It is anticipated that the additional culverts will reduce resistance to flow, and the associated channelization and ponding. Birds will be encouraged to forage further away from the road and traffic.

### **4.3. FISH AND WILDLIFE RESOURCES**

Other than the unavoidable loss of several roadside ponds due to the new culverts, restoration of a more natural water regime to the major basins and sub-basins of the area is expected to benefit fish and wildlife by improving habitat conditions. The USFWS has recommended the installation of large animal crossings which could accommodate large mammals such as the Florida panther and black bear. Construction of this type of crossing would require the road to be raised, and high fences to be installed to direct animals to the crossings. These activities are not within the scope of this project, however, box culverts that would provide road-crossings for smaller mammals will be incorporated whenever possible.

### **4.4. VEGETATION**

As stated in Section 3.3, shortened hydroperiods associated with restricted water flows have allowed invasion of wetland ecosystems by exotic plant species such as Australian pine, Brazilian pepper, and melaleuca. Restoration of a hydrologic regime more representative of historic natural conditions will encourage the re-connection of now fragmented communities such as cypress strands and sawgrass marshes. Hydroperiods favorable to desirable native vegetation are also expected to discourage the establishment of nuisance and exotic vegetation.

#### **4.5. HISTORIC PROPERTIES**

No historic properties are identified in the Florida Master Site File for the project area. Based on a January 11, 1999 site visit and subsequent literature review, the Corps has determined that no historic resources eligible for the National Register of Historic Properties will be affected by the Tamiami Trail Culverts project. This determination is made according to the guidelines established in 36 CFR Part 800 and in compliance with Section 106 of the National Historic Preservation Act. Coordination with the State Historic Preservation Officer (SHPO) is ongoing. Project construction will not commence until coordination with the SHPO is completed.

#### **4.6. RECREATION**

Recreation is not a stated purpose of the project. However, restoration of more natural hydrological conditions and subsequent habitat improvements may result in additional wildlife observation opportunities.

#### **4.7. WATER QUALITY**

There may be temporary increases in turbidity levels during construction, but these are expected to be minimal and controlled within State water quality standards. The U.S. Army Corps of Engineers will obtain water quality certification for this project from the Florida Department of Environmental Protection.

#### **4.8. AIR QUALITY**

At the present time, the only activities at the project site, which may affect air quality, are exhaust fumes from traffic traveling the road. The Tamiami Trail (U.S. 41) has an annual daily traffic (ADT) of about 6000 vehicles, and many of these are large trucks. At those sites where construction equipment and paving activities are present, there would be short-term air quality impacts associated with construction in the immediate vicinity.

#### **4.9. NOISE**

Noise levels in the area are not expected to increase. There will be, however, the temporary noises associated with construction activity in the local vicinity.

#### **4.10. HAZARDOUS AND TOXIC WASTES**

The preliminary assessment indicated that no hazardous, toxic, radioactive (HTRW), or other harmful substances are impacting the project area. However, if contaminants are found during property procurement or project construction, the site will be remediated. Contamination chemicals if not detected during the site assessment, may be disturbed or released by increasing the water level and hydroperiod or by removing unnatural structures or features from the landscape. Past experience has shown that the highly permeable ground substrate of that area results in rapid dilution of the residual contaminants.

#### **4.11. REUSE AND CONSERVATION POTENTIAL**

If milling and resurfacing along Tamiami Trail becomes part of the scope of culvert construction the Reclaimed Asphalt Pavement (RAP) could be used to construct the temporary detours.

#### **4.12. SOLID WASTES**

Concrete or paving materials would have to be disposed of in accordance with Federal, State and local requirements.

#### **4.13. PUBLIC SAFETY**

To ensure the safety of the driving public, traffic will be detoured around construction activity, and road re-surfacing would be accomplished after culvert installation to avoid the possible hazards of uneven pavement.

#### **4.14. NATIVE AMERICANS**

The project should not impact Native Americans or any tribal lands.

#### **4.15. CUMULATIVE IMPACTS**

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40CFR 1508.7).

Individually, the proposed action would tend to benefit water quality and water supply. Together with other similar actions, which are existing or being considered in the area, even greater benefits could be expected for these and other ecosystem values.

According to the USFWLS, future highway improvements planned for U.S. 41 (this would include the scenic vista observation turn-outs) may potentially increase overall vehicle use, which, in turn, may pose long-term consequences to endangered Florida panthers in the form of increased automobile-animal interactions.

#### **4.16 IRREVERSIBLE AND IRRETREIVABLE COMMITMENT OF RESOURCES**



Construction at each culvert location will result in both temporary and permanent wetland impacts:

#### 4.16.1. Tamiami Trail

The estimated maximum permanent wetland impact per culvert is 1,630 sq.ft., based on the final footprint after construction, with a fill pad approximately 20 feet wide extending along the length of each culvert, south of Tamiami Trail. The estimated temporary wetland impact per culvert is 2,220 sq.ft., based on approximate construction area required at each site minus the permanent impact area.

#### 4.16.2. LOOP ROAD

The estimated maximum permanent wetland impact per culvert is 300 sq.ft.,

based on the final footprint after construction, with a fill area approximately 10 feet wide extending along the length of the culvert on either side of the road, and a 15-foot headwall. The estimated maximum temporary wetland impact per culvert is 950 sq.ft., based on the approximate construction area required at each site minus the permanent impact area.

The stated goal of this project is to restore a more natural hydrological regime to an area that has been bisected by a major roadway. Improvements in the continuity of flow will lead to the seasonal hydroperiods required for the continued establishment and survival of healthy wetland communities.

### 4.17. ENVIRONMENTAL COMMITMENTS

The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing, or mitigating for adverse effects by taking the following actions:

1. Re-routing traffic within the existing maintained right-of-ways, remaining outside of the existing wetland boundary, and placing staging areas in existing upland areas to avoid temporary wetland impacts.
2. To minimize temporary wetland impacts, work would be done in areas above existing grade only, when possible, leaving below-grade root masses and seed banks in place to assist with revegetation. Revegetation plans will be implemented as soon as construction is completed at sites where wetlands have been temporarily impacted by culvert installation.
3. Employ best management practices with regard to erosion and turbidity control. Prior to construction, the construction team should examine all areas of proposed erosion/turbidity control in the field, and make adjustments to the plan specified in the plan control device as warranted by actual field conditions at the time of construction.

4. Construction at each location should be timed to avoid relevant nesting and/or breeding seasons for animals which may be impacted by the project. Each location should be surveyed prior to construction to determine if any protected species are using the area.

5. The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be prepared.

6. Demolition debris would be transported to a landfill or otherwise disposed of in accordance with Federal, State, and local requirements. Concrete or paving materials would be disposed of in accordance with Federal, State, and local requirements.

Additional actions have been or will be taken to comply with environmental requirements as discussed in the following section:

#### **4.18. COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS**

##### **4.18.1. National Environmental Policy Act of 1969**

Environmental information on the project has been compiled and this Environmental Assessment has been prepared. The project is in compliance with the National Environmental Policy Act.

##### **4.18.2. Endangered Species Act of 1973**

Consultation was initiated with USFWS on March 3, 1999, and completed on March 19, 1999. The USFWS concurs with the Corps determination that the proposed project, as described, is not likely to adversely affect endangered or threatened species under their purview. Consultation was initiated with NMFS on March 29, 1999, and completed on April 1, 1999. There are no known habitats in the project area for protected species under the purview of the NMFS. (See USFWS and NMFS letters in Appendix D). This project was fully coordinated under the Endangered Species Act and is therefore, in full compliance with the Act.

##### **4.18.3. Fish and Wildlife Coordination Act of 1958**

This project has been coordinated with the U.S. Fish and Wildlife Service (USFWS). A Coordination Act Report (CAR) dated May 4, 1999 was submitted by the USFWS. The USFWS has evaluated the proposed plan and has stated that the proposed project, as described, should provide significant hydrologic improvements and enhancement of wetland habitats through restoration of more natural sheet flow. Long-term benefits of a more natural hydropattern would include a decrease in the rate of expansion of exotic plant species, and possible increases in forage, cover and reproductive areas for fish and wildlife. The USFWS has also recommended that in addition to proposed hydrologic

and climatic monitoring, an ecologically-based monitoring program should be implemented, assessing pre and post-project conditions, to determine the level of ecological success obtained. The Corps may participate in such activity only as permitted by project authority. Activity outside of project authority and scope would be the responsibility of the local sponsors. This project is in full compliance with the Act.

#### 4.18.4. NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), and executive order 11593). This project is being coordinated with the State Historic Preservation Office (SHPO). Full compliance will be achieved upon concurrence of no effect by SHPO. Project construction will not commence until coordination with the SHPO is complete.

#### 4.18.5. Clean Water Act of 1972

The project is in compliance with this Act. A Section 401 water quality certification from the Florida Department of Environmental Protection will be applied for. The sponsor will apply for a Department of the Army permit, and any necessary state permits, for work outside of the Federal Project. All State water quality standards would be met. A Preliminary Section 404(b) evaluation is included in this report as Appendix A. The final 404(b) evaluation will be placed in the final EA following public review of the draft EA.

#### 4.18.6. Clean Air Act of 1972

No air quality permits would be required for this project.

#### 4.18.7. Coastal Zone Management Act of 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as Appendix B. State consistency review will be performed during the coordination of the draft EA.

#### 4.18.8. Farmland Protection Policy Act of 1981

No prime or unique farmland would be impacted by implementation of this project. This act is not applicable.

#### 4.18.9. Wild and Scenic River Act of 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This act is not applicable.

#### 4.18.10. Marine Mammal Protection Act of 1972

Incorporation of the safe guards used to protect threatened or endangered species during dredging and disposal operations would also protect any marine mammals in the area, therefore, this project is in compliance with the Act.

#### 4.18.11. Estuary Protection Act of 1968

No designated estuary would be affected by project activities. This act is not applicable.

#### 4.18.12. Federal Water Project Recreation Act

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) does not apply to this project.

#### 4.18.13. Fishery Conservation and Management Act of 1976

The project has been coordinated with the National Marine Fisheries Service (NMFS) and is in compliance with the Act (see NMFS letter of April 20, 1999 in Appendix D).

#### 4.18.14. Submerged Lands Act of 1953

The project would not occur on submerged lands of the State of Florida, therefore this Act is not applicable.

#### 4.18.15. Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990

There are no designated coastal barrier resources in the project area that would be affected by this project. These acts are not applicable.

#### 4.18.16. Rivers and Harbors Act of 1899

The proposed work would not obstruct navigable waters of the United States. The project is in full compliance.

#### 4.18.17. Anadromous Fish Conservation Act

Anadromous fish species would not be affected. The project has been coordinated with the National Marine Fisheries Service and is in compliance with the act.

#### 4.18.18. Migratory Bird Treaty Act and Migratory Bird Conservation Act

No migratory birds would be adversely affected by project activities. It is expected that forage, cover and possibly reproductive habitats for birds would be improved. The project is in compliance with these acts.

#### 4.18.19. Marine Protection, Research and Sanctuaries Act

This project does not involve any ocean dumping. Therefore, the Marine Protection, Research and Sanctuaries Act does not apply to this project.

#### 4.18.20. MAGNUSON-STEVENSON FISHERIES MANAGEMENT AND CONSERVATION ACT (PL 94-265)

This project has been fully coordinated with the NMFS. Based on the number of culverts, position and capacity, it has been determined that the proposed action will not adversely affect the essential habitat of species managed under this Act.

#### 4.18.21. E.O. 11990, Protection of Wetlands

Wetlands would be restored and enhanced by project activities. This project is in compliance with the goals of this Executive Order.

#### 4.18.22. E.O. 11988, Flood Plain Management

The project was evaluated in accordance with this Executive Order, and is designed to carry the 50-year flood within each major basin. The project would not increase flooding of private property, and would likely decrease flooding by equalizing water conveyance per square mile of flood plain.

#### 4.18.23. E.O. 12898, environmental justice

The proposed action would not result in adverse human health or environmental effects. Any impact of the action would not be disproportionate towards any minority or low-income population. The activity does not (a) exclude persons from participation in, (b) deny persons the benefit of, or (c) subject persons to discrimination because of their race, color, or national origin. The activity would not impact "subsistence consumption of fish and wildlife".

#### 4.18.24. E.O. 13089, CORAL REEF PROTECTION

No coral reef organism would be impacted by this project.



## 5. LIST OF PREPARERS

### 5.1. PREPARERS

Christine M. Bauer	Biologist	Principal Author
Peter Besrutschko	Environmental Engineer	HTRW
Carl Dunn	Landscape Architect	Design
David McCullough	Archeologist	Historic Properties
Russ Rote	Civil Engineer	Letter Report

### 5.2. REVIEWERS

Elmar Kurzbach	Supervisory Biologist
John Pax	Legal Counsel
Frank Grant	Project Manager

## 6.0. PUBLIC INVOLVEMENT

### 6.1. SCOPING AND DRAFT EA

If this EA concludes in a Finding of No Significant Impact (FONSI), a Notice of Availability of the FONSI/EA would be issued to agencies having jurisdiction or expertise, to interested parties or affected groups and private parties, to adjacent property owners, and other stakeholders.

### 6.2. AGENCY COORDINATION

This action will be fully coordinated with Federal, State and local agencies, and the public to satisfy NEPA requirements.

### 6.3. LIST OF RECIPIENTS

A list of recipients of the Notice of Availability of the FONSI/EA (see Section 6.1 above) has been placed in Appendix E.

### 6.4. COMMENTS RECEIVED AND RESPONSE

Any comments received from the Notice of Availability and any necessary response will be placed in the final EA.

## **7. LIST OF REFERENCES**

Alongi, David M. 1997. Coastal Ecosystem Processes. CRC Press, Boca Raton, Florida

Davis, Steven M. and John C. Ogden. 1994. Everglades, the Ecosystem and Its Restoration. The St. Lucie Press, Delray Beach, Florida

Ewel, Katherine C. 1992. Swamps. In Ecosystems of Florida (eds. R.L. Myers and J.J. Ewel). University of Central Florida Press, Orlando, Florida.

Janus Research. 1995. "A Cultural Resource Assessment Survey of State Road 90/Tamiami Trail from S.W. 152<sup>nd</sup> Avenue to S.W. 127<sup>th</sup> Avenue in Dade County". Performed for the Florida Department of Transportation.

Kushan, James A. 1992. Freshwater Marshes. In Ecosystems of Florida (eds. R.L. Myers and J.J. Ewel). University of Central Florida Press, Orlando, Florida.

McPherson, Benjamin F. 1986. Vegetation Map of the Big Cypress National Preserve. National Audubon Society, New York, New York.

Stanley Consultants, Inc. 1999. Tamiami Trail Culverts Final Report.

U.S. Army Corps of Engineers. 1998. Cape Sable Seaside Sparrow Breeding Distribution (Final).

U.S. Army Corps of Engineers. 1998. Draft Feasibility Report and EIS, Central and Southern Florida Project, Comprehensive Review Study.

U.S.. Fish and Wildlife Service. 1998. Draft Multi-Species Recovery Plan for the Threatened and Endangered Species of South Florida.

**PRELIMINARY SECTION 404(b) EVALUATION**  
**ENVIRONMENTAL RESTORATION**  
**TAMIAMI TRAIL CULVERTS CRITICAL PROJECT**  
**COLLIER & MONROE COUNTIES, FLORIDA**

**I. Project Description**

- a. Location. See Section 1.2 (Project Location) of the EA.
- b. General Description. See Section 1.4 ( Agency Goal or Objective) of the EA.
- c. Authority and Purpose. See Section 1.1 (Project Authority) and 1.3 (Project Need or Opportunity) of the EA.
- d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. See item (3) below.

(2) Quantity of Material. The exact quantity of fill material is yet to be determined. The amount of fill will be largely limited to no more than necessary to backfill trenches and plugs, stabilize culverts, and restore a more natural topography, hydrology, and landscape.

(3) Source of Material. The culverts to be installed will most likely consist of precast concrete. In restoring the existing pavement removed during culvert construction, an asphalt base may be used in lieu of stabilizing the earth backfill, or, instead of the earth backfill and pavement base material, a flowable fill (high slump concrete) may be used. Most, if not all, of the fill material for the backfilling of plugs and trenches would be obtained on-site, and essentially free of contaminants. Excavated limestone, depending on the quantity and state of the limestone, would be considered as a viable option for use as a bedding material, backfill material, and material used in construction of temporary detours to maintain traffic. If additional material is needed, it would come from an upland or approved commercial source similarly free of contaminants and cultural resources.

e. Description of the proposed Discharge Site.

(1) **Location.** See Section 1.2 of the EA.

(2) **Size.** The discharge size and location would largely be limited to no more than needed to install the additional culverts and blocking plugs at specific sites along approximately 43 miles of the Tamiami Trail (U.S. 41), and additional culverts beneath approximately 7.2 miles of Loop Road (CR 94). For the purposes of culvert installation, the existing Tamiami Trail right-of-way is 35 feet from the centerline of the road to the north, and 148 feet from the centerline to the south. The project limits along Loop Road include an area of 25 feet in each direction from the centerline of the roadway.

(3) **Type of Site.** The Tamiami Trail is a 2-lane, paved roadway constructed in the late 1920's to serve as a connector between Naples and Miami. It has an annual daily traffic (AADT) of approximately 6000 vehicles. Loop Road is a remote 10' - 15' wide unimproved roadway that may have an AADT of 25 vehicles.

(4) **Type of Habitat.** Typical plant communities intersected by the Tamiami Trail consist of coastal freshwater marsh, cypress forest, herbaceous marsh and prairie. Other natural habitats adjacent to the Tamiami Trail corridor, extending from Royal Palm Hammock to Fifty-Mile Bend, include coastal forest, mixed swamp forest, and pine forest ecosystems. According to the BCNP GIS maps (1998), the vegetative associations intersected by Tamiami Trail and Loop Road include graminoid marsh, hardwood scrub, scattered pine and cypress in herbaceous prairie, cypress with scattered pine, herbaceous prairie, and cypress strand. The disruption of the natural water flow by the roadway and canal has altered the hydrology of this area, creating unnatural hydroperiods and shifts in plant species composition.

(5) **Timing and Duration of Discharge.** Construction will be done in stages, with work being completed at certain sites, then moving on to the next sites. The duration of the project is expected to be approximately two years.

f. **Description of Disposal Method.** Various types of heavy equipment would be used. This might include earth moving equipment and loaders for dump trucks. If milling and resurfacing becomes part of the culvert construction, the Reclaimed Asphalt Pavement (RAP) could be used to construct the temporary detours. It is anticipated that limestone will be

encountered during excavation. At these locations it may be necessary to utilize impact hammers, a kelly bar ripper, and/or blasting.

## **II. Factual Determinations**

### **a. Physical Substrate Determinations.**

(1) **Substrate Elevation and Slope.** The project lies within Florida's Coastal Lowlands, in a region that is less than 15 feet above sea level. Small depressions having no surface drainage are common. The natural topography of the area is nearly flat, with the exception of unnatural features such as roadways, canals, berms, etc.

(2) **Sediment Type.** According to the 1998 soil survey, this area consists of soils that are very poorly drained. The surface layer (top 5 inches) is typically black muck (organic mud). The subsurface layer (5 - 10 inches) is dark gray fine sand, and the substratum (10 - approx. 80 inches) is a fine sand. Limestone outcrops were observed in the eastern portion of the project. Limestone can be encountered from the ground surface to a depth of 36 inches.

(3) **Dredge/Fill Material Movement.** Once the material is in place, movement is not expected. Some erosion may occur in specific areas if high rain events induce flooding.

(4) **Physical Effects on Benthos.** The benthos in the ponded areas adjacent to the road, and in the borrow canal where plugs are placed would be buried under the fill material, however these highly prolific organisms are expected to quickly re-establish in other areas of the canal. The ponded areas would be replaced with more natural wetlands due to the improved hydrology provided by the culverts and plugs.

### **b. Water Circulation, Fluctuation and Salinity Determination.**

(1) **Water Column Effects.** Other than installation of the plugs, the borrow canal will not be disturbed. Roadside ponded areas and other unnatural depressions would be filled.

(2) **Current Patterns and Circulation.** It is expected that a more natural overland flow of surface waters through wetlands would occur.

(3) Normal Water Level Fluctuations and Salinity Gradients. A more natural water flow may increase downstream releases of fresh water.

c. Suspended Particulate/Turbidity Determinations. A more natural sheet flow and decreased channelization at culvert sites, waters would contain less particulate and turbidity.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. There may be an increased potential for particulate and turbidity during construction, however the in-place project should provide less particulate and turbidity to downstream waters.

(2) Effects on the Chemical and Physical Properties of the Water Column.

(a) Light Penetration. The ponded areas adjacent to the roadway would be filled and replaced by a more natural wetland elevation. Light will more easily penetrate these shallower waters leading to an increase in emergent vegetation. Light penetration in the borrow canal is not expected to change.

(b) Dissolved Oxygen. The more even flow of surface waters would become more like that of a natural wetland than of the existing sometimes stagnant ponds. There may be a slight change in dissolved oxygen levels in the borrow canal due to a decrease in the east-west flow of water.

(c) Toxic Metals, Organics, and Pathogens. It is not expected that there will be a release of harmful levels of toxic or organic substances or pathogenic organisms. A preliminary assessment was conducted (see section 4.10 of the EA).

(d) Aesthetics. Restoration of a more natural hydrologic regime will allow the re-connection of fragmented cypress strands and freshwater marshes that were bisected by the roadway. Favorable conditions for desirable native vegetation will enhance the scenic beauty of the area.

(3) Effects on Biota.

(a) Primary Productivity and Photosynthesis. Primary productivity would shift from that of an open water system toward a wetland system in the



ponded areas near the roadway. This would result in a system dominated by emergent aquatic and wetland vegetation rather than aquatic vegetation, bacteria and algae.

(b) Suspension/Filter Feeders. A decrease in the east-west flow of the borrow canal may affect the availability of food to suspension and filter feeders.

(c) Sight Feeders. The existing open water habitats adjacent to the roadway (other than the borrow canal) would no longer be available to larger fish and other aquatic macro-organisms. However, the restored wetland areas may favor smaller seasonal organisms, wading birds, and other animals associated with a wetland system.

d. Contaminant Determinations.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. Movement of plankton in the borrow canal may be restricted due to the additional plugs and decreased east-west flow.

(2) Effects on Benthos. There would no longer be habitat for benthos in the ponded areas adjacent to the road, and in the borrow canal where plugs are placed. The ponded areas would be replaced with more natural wetlands, and benthic organisms would be more typical of this type of habitat.

(3) Effects on Nekton. Nektonic (free swimming) organisms present in the borrow canal may be somewhat restricted in movement due to the additional plugs. During periods of sufficient inundation the wetland system may contain a nekton component.

(4) Effects on the Aquatic Food Web. Wading birds that have become accustomed to feeding in the roadside ponds will have to move further away from the road to find suitable foraging areas. The increased water conveyance to the south of the roadway is expected to provide enhanced forage opportunities for wading birds.

(5) Effects on Special Aquatic Sites.

(a) Hardground and Coral Reef Communities. No hardground or coral reef communities would be impacted.

(b) **Sanctuaries and Refuges.** The project would benefit The Ten Thousand Islands National Wildlife Refuge and other nearby habitats (see section 1.3 of the EA).

(c) **Wetlands.** Improvements in the continuity of flow will lead to more natural hydropatterns, and restoration of wetland function and value, both north and south of the road.

(d) **Mud Flats.** No mud flats will be effected.

(e) **Vegetated Shallows.** The shallow bay bottoms to the southwest of the project area would benefit from the restoration of more natural water flows.

(f) **Riffle and Pool Complexes.** No riffle and pool complexes would be involved.

(6) **Endangered and Threatened Species.** See Section 4.2 (Threatened and Endangered Species) of the EA.

(7) **Other Wildlife.** See Section 4.3 (Fish and Wildlife Resources) of the EA.

(8) **Actions to Minimize Impacts.** See Section 4.25 (Environmental Commitments) and Section 4.26 (Compliance with Environmental Requirements) of the EA.

**f. Proposed Disposal Site Determinations.**

(1) **Mixing Zone Determination.** During fill operations, there would be some introduction of sediment and turbidity to nearby waters. This would be abated by good management and construction practices. The effect would be temporary.

(2) **Determination of Compliance with Applicable Water Quality Standards.** See clean water act comppliance section of EA

(3) **Potential Effects on Human Use Characteristics.**

(a) **Municipal and Private Water Supplies.** The project would not have an adverse effect of municipal and private water supplies.

(b) Recreational and Commercial Fisheries. There is some recreational fishing conducted in the borrow canal; this is not expected to be impacted. The area does not support commercial fisheries, however, improved downstream water quality may benefit such uses.

(c) Water Related Recreation. There is no water related recreation in the area other than fishing and observing wildlife.

(d) Aesthetics. See section 3.6 of the EA

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. The Collier Seminole State Park, Picayune Strand State Forest, Ten Thousand Islands National Wildlife Refuge, Fakahatchee Strand State Preserve, Big Cypress National Preserve, Everglades National Park, and other similar habitats in the area will benefit from the project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. Individually the proposed action would benefit water quality, wildlife and ecosystem values. Together with other similar actions which are existing or being considered in the area, even greater benefit could be expected. This project would be an important element of a larger on-going effort to reduce habitat fragmentation in the Everglades and other wetland areas of South Florida.

h. Determination of Secondary Effects on the Aquatic Ecosystem. This project will provide an overall improvement to the hydrology and aquatic ecosystems of the entire area.

### III. Findings of Compliance or Non-compliance with the Restrictions on Discharge.

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.
- c. After consideration of disposal site dilution and dispersion, the discharge of fill materials will not cause or contribute to, violations of any applicable State water quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

- d. The installation of additional culverts and plugs along the Tamiami Trail and Loop Road will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.
- e. The placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.
- f. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines.

## **FLORIDA COASTAL ZONE MANAGEMENT PROGRAM**

## **FEDERAL CONSISTENCY EVALUATION PROCEDURES**

## **ENVIRONMENTAL RESTORATION**

## **TAMIAMI TRAIL CULVERTS CRITICAL PROJECT**

## **COLLIER & MONROE COUNTIES, FLORIDA**

**1. Chapter 161, Beach and Shore Preservation.** The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

**Response:** The proposed action does not involve activity on the beach or any coastal shoreline.

**2. Chapters 186 and 187, State and Regional Planning.** These chapters establish the State Comprehensive Plan which sets goals that articulate a strategic vision of the State's future. It's purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

**Response:** The proposed project has been coordinated with various Federal, State and local agencies during the planning process. The project would provide for ecosystem restoration and improvement in surface water quality and quantity.

**3. Chapter 252, Disaster Preparation, Response and Mitigation.** This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

**Response:** The proposed project would have little or no impact on disaster preparation, response or mitigation.

**4. Chapter 253, State Lands.** This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

**Response:** The proposed project would provide for ecosystem restoration and associated benefits.

**5. Chapters 253, 259, 260, and 375, Land Acquisition.** These chapters authorizes the state to acquire land to protect environmentally sensitive areas.

**Response:** The proposed project will take place within state and county rights-of-way.

**6. Chapter 258, State Parks and Aquatic Preserves.** This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

**Response:** The Picayune State Strand Forest, Collier Seminole State Park, and the Fakahatchee Strand State Preserve are in the vicinity of the project, and will most likely benefit by the improved hydrologic conditions. The project is consistent with this chapter.

**7. Chapter 267, Historic Preservation.** This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

**Response:** This project is being coordinated with the State Historic Preservation Officer (SHPO) through the planning process, and will be in full compliance when SHPO provides concurrence.

**8. Chapter 288, Economic Development and Tourism.** This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

**Response:** The proposed project would not adversely impact beneficial development, economic diversification or tourism.

**9. Chapters 334 and 339, Public Transportation.** This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

**Response:** Vehicular traffic along the Tamiami Trail (U.S. 41) would be temporarily detoured around project construction. This would be done in stages as construction progresses, and would be short-term. The Florida Department of Transportation is a cooperating agency in this project.

**10. Chapter 370, Saltwater Living Resources.** This chapter directs the state to preserve, manage and protect the marine, crustacean, shellfish and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

**Response:** The proposed action would not adversely impact saltwater living resources. The project is consistent with the goals of this chapter.

**11. Chapter 372, Living Land and Freshwater Resources.** This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to



perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

**Response:** Although some existing ponded areas adjacent to the road will be lost, this habitat is not considered high quality and presents a hazard to wading birds. The project will not have an overall adverse effect on freshwater aquatic life or wild animal life, rather it is expected to benefit wildlife and water quality.

**12. Chapter 373, Water Resources.** This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

**Response:** This project would benefit the quality and quantity of surface water resources as described by this chapter.

**13. Chapter 376, Pollutant Spill Prevention and Control.** This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

**Response:** The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

**14. Chapter 377, Oil and Gas Exploration and Production.** This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

**Response:** This project does not involve the exploration, drilling or production of gas, oil or petroleum product and therefore, this chapter does not apply.

**15. Chapter 380, Environmental Land and Water Management.** This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

**Response:** The proposed project will not have any regional impact on resources in the area. Therefore, the project is consistent with the goals of this chapter.

**16. Chapter 388, Arthropod Control.** This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

**Response:** The project will not further the propagation of mosquitoes or other pest arthropods.

**17. Chapter 403, Environmental Control.** This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

**Response:** This project will be reviewed by the Florida Department of Environmental Protection through either the planning or the regulatory process. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Water Quality Certification will be sought from the State prior to construction. The project complies with the intent of this chapter.

**18. Chapter 582, Soil and Water Conservation.** This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

**Response:** The proposed project is not located near or on any extensive or highly productive agricultural lands; therefore, this chapter does not apply.

**June 9, 1999**

**Planning Division**

**Environmental Branch**

**TO WHOM IT MAY CONCERN:**

**Pursuant to the National Environmental Policy Act and U.S. Army Corps of Engineers Regulation (33 CFR 230.11), this letter constitutes the**

**Notice of Availability of the Finding of No Significant Impact (FONSI) for the Critical Project, Tamiami Trail Culverts. The Florida Department of Transportation and the South Florida Water Management District are the non-Federal sponsors for this project.**

**If you have any comments, they should be submitted in writing to the letterhead address and received by July 9, 1999. Any request for a public hearing must be in writing and state specifically the reasons for holding a public hearing.**

**Questions concerning this notice should be directed to Ms. Christine Bauer at 904-232-3271, or fax 904-232-3442. A copy of the Environmental Assessment (EA) is available at the Reference Desk of the Collier County Public Library at 650 Central Avenue in Naples, Florida. The point of contact at the library is Ms. Elizabeth Nagengast, 941-261-8208.**

**I have enclosed a copy of the preliminary FONSI and a description of the project.**

**Sincerely,**

**James C. Duck  
Chief, Planning Division**

**Enclosures**

**PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT**

**TAMIAMI TRAIL CULVERTS, CRITICAL PROJECT**

**COLLIER COUNTY, FLORIDA**

**MONROE COUNTY, FLORIDA**

**I have reviewed the Environmental Assessment (EA) for the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are in summary:**

- a. This project will help to restore more natural hydrological conditions to the major drainage basins, and coastal areas to the south of Tamiami Trail (US41). The increased number of flowways provided by the project will improve the flow of surface water within the watersheds of Ten Thousand Islands National Wildlife Refuge & Aquatic Preserve, Picayune State Strand Forest, Fakahatchee Strand State Preserve, Big Cypress National Preserve, and Everglades National Park. Habitat value for native plant and animal communities will also be improved by the more evenly distributed conveyance of water.
- b. The Fish and Wildlife Coordination Act Report of 4 May 1999 indicates no objection by the Department of the Interior and full compliance with the Endangered Species Act, the Coastal Barrier Resources Act, and the Fish and Wildlife Coordination Act.
- c. Pending the State's concurrence with the Coastal Zone Consistency (CZM) Determination (Appendix B of the EA), the action is consistent with the State's CZM programs.
- d. Pending completion of consultation with the State Historic Preservation Officer, sites of cultural or historical significance will not be affected.
- e. Certification of water quality from the state of Florida would be obtained pursuant to Section 401 of the Clean Water Act.
- f. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources, including the following: (1) Operation and maintenance of the project to further the goals of ecosystem restoration, water quality, and avoid increased ponding and channelization. (2) Use of appropriate fill materials and proper disposal of excavated or demolition materials. (3) Measures to avoid the spread or release of contaminants, petroleum products, or other harmful substances. (4) State concurrence

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with the Coastal Zone Consistency Statement prior to the final EA and FONSI.

(5) Afford the State Historic Preservation Officer a reasonable opportunity to comment concerning any eligible historic resources prior to the final EA and FONSI.

**Joe R. Miller Date**

**Colonel, U.S. Army**

**District Engineer**

**Critical Project, Tamiami Trail Culverts**

**Project Description**

**The environmental benefits that are the goals of this project depend on changing the flow regime through Tamiami Trail for normal, low flow conditions. Therefore, re-establishing sheet flow south of Tamiami Trail is the prime design consideration. This project calls for 62 culverts to be installed at 54 different sites along Tamiami Trail, and 15 culverts at 8 sites along Loop Road. In addition, a total of up to 21 blocking plugs are to be constructed in the borrow canal to direct water flow into the culverts for full design performance. Culverts will be placed in areas to promote the restoration of natural flow patterns south of Tamiami Trail, and shall be designed to discourage ponding on either side close to the roadway. The new culverts are to be constructed within the right of way, which is 35 feet from the centerline of the road to the north, and 148 feet from the centerline to the south. Plugs will be designed to overflow at high discharges so that the roadway is not overtopped. Any changes to the drainage system should not impede hydraulic performance under severe flood conditions. The presence of mature trees, the presence or absence of nuisance vegetation, and the known presence of protected flora and fauna will be carefully considered during culvert design and placement.**

**This Web Page Created by Kenneth R. Dugger, Environmental Coordination Section, Environmental Branch, Planning Division, [kenneth.r.dugger@usace.army.mil](mailto:kenneth.r.dugger@usace.army.mil)**

**Created: June 16, 1999**